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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,609	11/03/2002	Tsung-Wei Huang	ACMP0021USA	2457
27765	7590	03/18/2004	EXAMINER	
NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE) P.O. BOX 506 MERRIFIELD, VA 22116			BROOKE, MICHAEL S	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 03/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/065,609	<b>Applicant(s)</b> HUANG ET AL.	
	<b>Examiner</b> Michael S. Brooke	<b>Art Unit</b> 2853	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 13-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/06/02</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 13-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the Paper filed on 02/12/04.

### ***Drawings***

The drawings are objected to because in Fig. 4, Ref. No. "19" is not shown. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 4, 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142).**

With respect to claim 1, Hawkins teaches (Fig. 5): a substrate (15), a bubble generator (41), a first conductive trace (38) that is made of polysilicon and a second conductive trace that supplies electrical signal to the bubble generator. While not

specifically shown, the second conductive trace would necessarily be connected to a driving element that supplies the electrical signals to the bubble generator.

With respect to claim 4, Hawkins teaches a dielectric layer (27) (col. 6:10-11) that is disposed between the first and second conductive traces.

With respect to claim 8, Hawkins teaches that the second conductive trace is made of aluminum (col. 6: 14-15).

With respect to claim 9, Hawkins teaches a chamber that is connected to a manifold (20) and that has (e.g., see Fig. 2) a nozzle (14).

With respect to claim 12, Hawkins teaches that the ink is provided by an ink supply. This ink supply would be considered to be a cartridge.

Hawkins teaches the claimed invention with the exception of the functional device being positioned on the substrate.

Fujita teaches an ink jet print head that has MOS transistor functional devices and the bubble generators formed on the same substrate for the purpose of forming a plurality of semiconductor devices with characteristics of a high withstand voltage and with good electric separability between each device (col. 11:35-58).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Hawkins with a functional device that is formed on the same substrate as the bubble generator, in order to form a plurality of semiconductor devices with characteristics of a high withstand voltage and with good electric separability between each device, as taught by Fujika et al.

**Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Ozaki et al. (6,402,302).**

Hawkins, as modified, teaches the claimed invention with the exception of a contact layer positioned between the first and second traces and wherein the second trace has at least one pad.

Ozaki teaches that it is well known in the ink jet art use electrical connection pads for the purpose of electrically connecting different circuit elements (col. 10:65-67).

It would have been obvious to one of ordinary skill in the ink jet art to have provided Hawkins, as modified, with electrical connection pads between the first and second traces for the purpose of electrically interconnecting the first and second traces, as taught by Ozaki.

**Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Device Electronics for Integrated Circuits (Muller).**

Hawkins, as modified, teaches the claimed invention with the exception of the functional device having a source, drain and gate and the functional device being a MOSFET with a polysilicon gate.

Muller teaches that compared with MOS transistors, MOSFETs provide the advantages of increased simplicity and higher component density (see p. 422).

Furthermore, Muller teaches numerous advantages that are realized when the gate is formed from polysilicon (see p. 445).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provided Hawkins, as modified, with a MOSFET having a silicon gate, in order to achieve the advantages discussed in Muller.

The limitations of claim 7 are directed to the method of manufacturing the head and do not patentably limit the structure of the apparatus.

**Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawkins (4,935,752) in View of Fujita (5,666,142), as applied to claims 1, 4, 8, 9 and 12 above, and further in view of Leban (EP 317 171).**

Hawkins, as modified, teaches the claimed invention with the exception of first and second bubble generating devices, wherein the first bubble generating device generates a bubble that functions as a fluid valve.

Leban teaches an ink jet print head having first and second bubble generators (18 and 20, respectively). When ink is ejected, the first bubble generator is energized to form a bubble. This bubble pushes ink into the drop ejecting chamber (16) where a droplet is ejected by the second bubble generator. The use of the first bubble generator reduces back pressure in the ink chamber (see abstract), by forming a bubble that acts as a virtual valve.

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made, to have provide Hawkins, as modified, with the first and second

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drop generators of Leban, in order to improve operational frequency, reduce back pressure and to produce drops of varying sizes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is (571) 272-2142. The examiner can normally be reached on M-F from 5:30 AM-2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael S. Brooke  
Examiner  
Art Unit 2853

MSB  
03/04/04